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REMARKS

Claims 1, 17, and 35 were rejected under 35 USC 103 as being unpatentable over Galand, US Patent 6,038,212. The Examiner's comments relating to this rejection were not fully understood, so applicants' representative called the Examiner on February 2, 2004. The Examiner's courtesy and helpful explanations are greatly appreciated.

As gleaned from the telephone conversation, the Examiner considers the access nodes in the Galand reference to be the elements that correspond to nodes in applicants' claim 1, and asserts that the processing module in the access nodes (a) makes the determination that is specified in claim1, and (b) is adapted to be a control module as well as backup module, as specified in claim 1. Applicants respectfully traverse.

Applicants' claim 1 specifies that the processing module makes a determination. Although the claim is silent as to what criterion is used for making the determination, it is absolutely clear that a determination is made. Furthermore, each node makes such a determination relative to each of the link bundles that are associated with the node. Therefore, to establish a valid correspondence, the Examiner must demonstrate that each of Galand's access nodes (1) makes such a determination, (2) makes such a determination relative to each link bundle that is associated with the node, and (3) the node is adapted to be a "control node" or a "backup node." As a control node, the processing module of an access node must

(a) obtain an indication of a failure indication in one of it links and (if a failure exists), and

(b) trigger rerouting.

As a backup node it must

(a) obtain an indication of a failure indication in one of it links and (if a failure exists),

(b) obtain an indication that a specific other node (the one that has been determined to be the control node relative to the link bundle that has failed) is unresponsive, and

(c) trigger rerouting when it obtains such indication relative to the control node.

The Examiner believes that the Galand nodes truly correspondence to applicants' nodes, save for the obvious implication that the node that sends a trigger is the control node and the nodes the receive the trigger are the backup nodes. The Examiner also

believes that his assertions are supported by Galand's claim1, col. 4, lines 27-42, col. 7, lines 5-65, and col. 9, lines 9-25. (The line numbers mentioned here a slightly different from those presented in the Office action. They conform better to the text, and they are as specified by the Examiner in the aforementioned telephone conversation.)

Applicants, on the other hand, disagree with the Examiner's characterization of the teachings found in Galand, and respectfully submitt that the cited passages fail to support the Examiner's assertions that the processing unit within the access nodes makes the aforementioned determinations and that the processing unit within the access nodes is adapted to serve as either a control node or a backup node.

Galand's claim 1 teaches a method in a network comprising access nodes and intermediate nodes. The claim specifies that each node includes a topology database (though it is not clear whether the "each node" refers to each access node, or to each node of the network, regardless of whether it is an access node or an intermediate node). The method includes a step of identifying a trunk involved in a failure, but it is silent as to which element detects this failure. It could be one of the nodes that directly connects to the failed trunk, the other node that connects to the failed trunk, some other node, or some special overarching network element that is charged with the responsibility to detect failures. The reiterate, there is no teaching as to what element detects trunk failures. The method also specifies a step of noting the total number (N) of connections that are affected, but it is silent as to what element does this detecting. Impliedly, the noting is based on the topology database, but that does not require the element to be a node of the network. The method further specifies a step of broadcasting the number N throughout the network. The method is silent as to what element does this broadcasting. It is possible that it is the element that performs the step of noting, but that is not required. The method still further specifies a steps of providing a network dependent parameter, and providing a random number. Again the method is silent as to what element(s) perform(s) this step, but one might interpret these as excluding the access nodes, since the steps specifies "providing each access node." However, a different interpretation can also e set forth. Penultimately, the method specifies a step of computing delay, and here, too, the method is silent as to what element performs this

step. Lastly, the method specifies that *each access node* starts a reconnection set-up operation.

One might argue that if an access node detects a failure, it might be the one that sends out a broadcast message. To that extent, it triggers a rerouting process. If so, it may be considered a "control node" and be in conformance with the language of applicants' claim 1. However, it is quite clear that there is no notion of two nodes that may trigger rerouting in response to a single failure, with one "wearing the hat" of a control node, and one "wearing the hat" of a backup node. There is also no step that is undertaken by any access node (or by any other node, for that matter) to determine whether, in connection with a particular link bundle the node ought to serve as a control node, or as a backup node.

In short, the attributes that are necessary to find correspondence between the processing module of claim 1 and the processing module in the Galand access node (or the intermediate node) are not present in, and are not suggested by, Galand's claim 1.

As for the col. 4 passage, all that it teaches is that alternate routing (in response to a failure) takes time to set up, disrupts connections at the end user level, represents traffic load that can paralyze the network, and that the notion of a spanning tree organization has been used to optimize control of traffic operation. This passage does not teach anything specific about control nodes, backup nodes, or determinations that are made by the nodes as to what role, or roles, they play in the network.

As for the col. 7 passage, it teaches that each node includes a Routing Point that routes incoming data packets, and that each node determines routing paths. It also teaches that the Routing Point includes dictionary services, maintains a consistent view of the network, and provides for reservation of resources. The passage also briefly describes the elements within the Routing Point, and particularly mentions the Route Controller that performs Trunk Connection Management (TCM) operations, including the optimum routes that may be used to complete a communication path. This passage does not describe or suggest the notion of different roles that a node might be called upon to play (control node, or backup node), does not describe or suggest any step for making a determination regarding the specific role that a node might be called upon to play relative to a particular link bundle, and does not describe or suggest the notion of two nodes that

may trigger rerouting in response to a single failure, with one "wearing the hat" of a control node, and one "wearing the hat" of a backup node.

Lastly, as for the col. 9 passage, it addresses the Control Spanning Tree, which is the principal system used to disseminate control information such as the topology database. In applicants' view, however, the way information is disseminated is simply not relevant to applicants' claim 1, generally, and certainly not relevant to the question of whether the correspondence asserted by the Examiner is valid. Claim 1 does not address the issue of information dissemination at all.

Accordingly, it is respectfully submitted that the assertion made by the Examiner regarding the correspondence of the Galand access nodes to the nodes specified in claim 1 are not supported by the citations provided by the Examiner, and do not hold. It is respectfully submitted that claim 17 is not obvious in view of Galand.

Regarding claim 17, it specifies an apparatus that, as in claim 1, is adapted to assume two roles with respect to each of its ports: the role of a control node, and the role of a backup node. As a control node, it triggers a rerouting in response to a failure indication, and as a backup node it triggers a rerouting in response to a failure indication, **but** "only when another apparatus is unresponsive."

For the reasons expressed above, applicants believe the nodes of Galand, and particularly, the access nodes of Galand, do not make the determination as to the role the nodes are to assume, are not adapted to take on more than one role, and particularly are not adapted to serve as "backup nodes." Therefore, it is respectfully submitted that claim 17 is not obvious in view of Galand.

As for claim 35, applicants respectfully submit that the above remarks pertaining to claim 1 apply with equal vigor to claim 35 and that, therefore, claim 35 is not obvious in view of Galand.

Claims 1, 17, and 35 were also rejected under 35 USC 103 as being unpatentable over Galand in view of Gregorat, US Patent 6,327,243. Applicants respectfully traverse.

It is noteworthy, relative to the above-discussed rejection of claims 1, 17, and 35 over the Galand reference, that in item 3 of the Office action the Examiner admits that "Galand fails to disclose of a processing module that determines whether the node of a

processing module is a control node or a back node." This clearly supports applicants' assertion above that claims 1, 17, and 35 are not obvious in view of Galand.

The Examiner asserts that Gregorat discloses that a primary packet routing engine "may switch over to a secondary packet router." This is not wholly accurate and, therefore, misleading.

- First Gregorat teaches a switch with two distinct controllers; one being the primary controller and the other being the secondary controller. There is no processing unit that makes a determination as to whether it serves as a primary controller or as a backup controller. Rather, it is an arrangement with two distinct units where one is active and the other is idle.
- Second the Greograt reference teaches that the primary controller transmits a switchover request to the secondary controller (see step 305 in FIG. 3). This is contrary to the concept embodied in the rejected claims where the backup node (secondary controller) detects an error, and also detects that the control node (primary controller) – which should have taken action based on the detected error – failed to take the required action and, therefore, the backup node (secondary controller) takes the action.
- Third, the action described in Gregorat is not one of rerouting. Indeed, it is the *antithesis* of rerouting, since both the primary and the secondary controllers are within the same switch.
- Fourth, there is absolutely no motivation in the Galand arrangement, where error indications are broadcasted through the network, and access nodes that are affected by the error initiate some action, even though they may not be associated with the link or links where the error occurred, to add the teachings of Gregorat. Gregorat would simply contribute another processor in each node of the network, but that would not help matters.

Therefore, based on the above analysis of Galand, and the above analysis of Gregorat, it is respectfully submitted that claims 1, 17 and 35 are not obvious in view of the Galand and Gregorat combination of references.

Claims 2-4 and 18-28 were rejected under 35 USC 103 as being unpatentable over Galand in view of Gregorat and further in view of Burdett, US Patent 6,327,675.

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Applicants respectfully traverse. First, the Examiner does not appear to be applying Burdett to the independent claims but, rather, to the limitations added in claims 2-4 and 18-28. Burdett, according to the Examiner, teaches handling recoverable faults, discloses functional processors (FPs), and a spare FB. Software within the control processor tracks the physical slot locations of the FPs and, thus, according to the Examiner, "the spare capacity information from other apparatus is connected to apparatus via ports and broadcasted to receive status change by the control processor." Respectfully, the above-quoted conclusion by the Examiner is not warranted by the teachings found in Burdett.

It is true that Burdett teaches the use of a node 10 that has a plurality of functional processors (FPs), and one of them is a spare FB. However, all of the FPs, including the spare FP, are **within** the module. If one FP module fails and the spare FP is employed (with attendant communication of information), the entire operation remains within the module. In contradistinction, claim 2 defines a communication module within a node that receives inform from other nodes that connect to that node, and rebroadcasts this information. The term "rebroadcasts" suggests that the received information was by means of a broadcast, but even if one were to argue as to what it means, it is clear that it the term "rebroadcasts" does not mean sending information from one element within a node to another element within the same node. Therefore, it is respectfully submitted that claim 2 is not obvious in view of the Galand, Gregorat, and Burdett combination of references.

Claim 3 also defines a communication module, but is more specific than claim 2, specifying that the rebroadcast does not extend to the node from which the node's information came. As for claim 4, it specifies that the rebroadcasting of information is to a computable set of nodes. Nothing like that is taught or suggested by Burnett.

Claim 18 specifies that the information that is received is spare capacity information from apparatus that is connected to the apparatus specified in the claim via ports of the apparatus. In Burdett, in contradistinction, the communication to a spare FP is from the controller, and not from other apparatus "that is connected to said apparatus via said ports." Claims 19-21 are similar to claim 18 with respect to the differences between it and the teaching of the Burdett reference. Claims 22 and 23 also specify a *rebroadcast index*. This notion is found in none of the cited references. Claim 24

depends on claim 19. Claim 25 depends on claim 24, and further specifies initiating a "re-routing pre-planning process." No such process is described or suggested by any of the cited references. Claims 26-28 depend on claim 25.

Based on the above, it is respectfully submitted that claims 2-4 and 18-21 are not obvious in view of Galand, Gregorat and Burdett because the latter does not supply that which is missing in the independent claims 1 and 17 on which the rejected claims depend, and because Burdett does not teach the additional limitations that claims 2-4 and 18-28 introduce.

Claims 29-34 were rejected under 35 USC 103 as being unpatentable over Hsing, US Patent 6,167,025 in view of Burdett, US Patent 6,327,675. Applicants respectfully traverse. These claims were rejected, under the same statute, and in view of the same references, in the immediately previous Office action. In their response, applicants addressed the distinction that these claims possess relative to the teachings of the Hsing and Burdett references. Therefore, the Examiner is now respectfully requested to explicitly and specifically rebut applicants' argument, or withdraw the rejection.

Substantively, the Examiner asserts that Hsing teach a restoration method based on per-planned hop-by-hop routing. The neighboring upstream switch from a failed link or node attempts to find an alternative route to the destination device. Hsing also teaches the notion of a message (reroute setup message) that includes "re-route count and identifier of the switches which generated the received messages." The Examiner asserts that this denotes broadcasting to other nodes. Hsing also teaches determining whether the setup message calls for a recreation of re-routing plans.

Applicants partially agree with the Examiner's statements regarding the teachings in Hsing. In applicants' view, Hsing describes a method for restoring connections in an ATM network. The method contemplates detection of an error, directing the neighboring upstream ATM switch to initiate employing alternate routing, and directing the neighboring downstream ATM switch to begin process to release capacity. The information regarding the alternate route and the information regarding the release of resources is spread from one ATM switch to a next ATM switch based on information contained in a routing table of the switch; one hop at a time. It is true that the re-route

setup message includes a re-route count, but as col. 15, lines 16-18 teach, the re-route count value

> corresponds to the re-route count obtained from the call record of the switch generating the setup message incremented by 1 to reflect the occurrence of a new failure event.

In other words, the re-route count is a count of the number of failure events. None of the information contained in the re-route message contains the **number** of hops, which is the notion specified in the first step of claim 29.

Additionally, the spreading of information in the Hsing reference is directed, according to specification in the routing table. This is contrary to **broadcasting**, as specified in claim 29 because broadcasting, by its nature, is an undirected method of spreading information. Viewed another way, the Hsing method of spreading information is controlled by the element that possesses the information and wishes to spread it, whereas in claim 29 method, which specifies broadcasting, the spreading information is controlled by the element that is willing to receive information and act upon it.

The Burdett reference is cited – based on column 7 and claims 9-13 – for the proposition that it teaches that a "control processor redirects traffic based on a failed link or status change and generates a plan and provides instruction to the back processor of the redirecting path." Applicants respectfully disagree. Neither the cited column 7, nor claims 9-13 even mention the word "link," and the whole thrust of the Burdett disclosure relates to possible failures of functional processors (FPs) **within** a node. Indeed, these passages also do not mention "status change," or "plan," and the only redirecting of traffic that occurs is when a "primary module" fails for longer than a predetermined time interval.

Since the Hsing reference does not suggest either of the two steps defined in claim 29, and since the Burdett reference also does not suggest these steps, it follows that claim 29 is clearly not obvious in view of the Hsing and Burdett combination of references. Consequently, claims 30-34, which depend on claim 29, are also not obvious in view of the Hsing and Burdett combination of references.

Claims 5-7, 10, 15, 16, 36, and 37 were rejected under 35 USC 103 as being unpatentable over Arslan, US Patent 5,706,276 in view of Hsing. Applicants respectfully traverse. Again, this rejection does not represent a new ground for rejection because the

very same rejection was lodged, and addressed, previously. Applicants have addressed the distinction that these claims possess relative to the teachings of the Arslan and Hsing references, and therefore the Examiner is now respectfully requested to explicitly and specifically rebut applicants' arguments, or withdraw the rejection.

Substantively, the Examiner assets that Arslan discloses, in col. 2, and in FIG. 1 and the text portions that relate to FIG. 1, a network where "link bundles are carried over physical spans of transmission facilities comprising a neighborhood associated with each node, where neighborhood may be different in size from distinct neighborhood." To the extent understood, applicants respectfully disagree.

It is respectfully submitted that Arslan does not present, describe, or suggest any notion of neighborhoods, of whatever size, that is associated with any node. Col. 2 consists of a tail portion of the "Summary of the Invention," the "Brief Description of the Drawing" section, and about 30 lines of the "Detailed Description" section. The text that relates to FIG. 1 extends further, until line 50 of col. 3, where a discussion of FIG. 2 commences. Nowhere in the Arslan references, and particularly nowhere in cols. 2 and 3 is there a reference to neighborhoods, or to any other aspect of the network that can be construed as neighborhoods associated with each node.

Independent claim 5, in contradistinction, specifies that

(a) each node in the network has a specified neighborhood,

(b) different nodes may have neighborhoods of different size, and

(c) a plan is stored in each node that is associated with the neighborhood.

None of these elements are described or suggested by Arslan.

The Examiner admits that Arslan does not have a processing module that receives spare capacity information in neighborhood and maintains a set of re-route plans or pointers. However, the Examiner asserts that Hsing does. Applicants respectfully submit that Hsing does not have a notion of a neighborhood, and does not have a notion of a plan for a neighborhood. All that Hsing teaches is that if a failure is detected in a node, the node that is immediately upstream from the failed node is called upon to perform a function, and the node that is immediately down stream from the failed node is also called upon to perform a function. That does not teach or suggest a neighborhood as claim 5 specifies, and it does not teach or suggest a plan as claim 5 specifies. The notion

of a neighborhood is not present in the Hsing teachings in columns 13-16, as asserted by the Examiner, and certainly there is nothing in the Hsing reference that is suggestive of neighborhoods that are of different size – as claim 5 specifies. Since the Examiner is citing the text passage of four columns, which is a significant portion of text, and since applicants assert that those columns do not teach that which the Examiner asserts that they teach, it is possible that something was missed. Therefore, if the Examiner disagrees with applicants' arguments, it would be greatly appreciated if the Examiner were to provide a more focused reference, pointing to specific lines/sentences within the four-column text passage.

Taking the above arguments into consideration, it is respectfully submitted that claim 5 is not obvious in view of Arslan and Hsing combination of references, and nor are claims 6-7, 10, 15 and 16, which depend on claim 5.

As for claim 36, it specifies that the node imparts a partitioning of the network into neighborhoods, and further specifies that the node includes means that allows traffic to be rerouted solely by changes in paths within the neighborhood. As indicated above, such a node is not described or suggested by Arslan, or Hsing, or by their combination. Claim 37 depends on claim 36, and injects the notion that the neighborhoods do not have to be mutually exclusive but, rather, can overlap. Clearly this notion is not present of suggested by the Arslan and Hsing combination of references.

Claims 38-46 were rejected under 35 USC 103 as being unpatentable in view of Hsing and further in view of Commerford, US Patent 6,134, 671. Applicants respectfully traverse.

This rejection is a verbatim repeat of the rejection lodged, and addressed, in the previous Office action response. Applicants have addressed the distinction that these claims possess relative to the teachings of the Hsing and Commerford references in the previous response, and therefore the Examiner is now respectfully requested to explicitly and specifically rebut applicants' arguments with specificity, or withdraw the rejection.

Substantively, the Commerford reference is presented for its alleged teaching of dynamically generating restoration routes within a communication network. Those teachings do not supply that which is missing in the Arslan and Hsing references relative to the limitations of claim 36, discussed above, which make the claim upon which claims

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38-46 depend, not obvious. Since the base claim on which claims 38-46 depend is not obvious in view of the Arslan, Hsing, and Commerford combination of references, it follows that the dependent claims 38-46 are also not obvious in view of this set of references.

Claims 8, 9, 11-14, 22, and 23 were indicated to be allowable, but for the fact that they depend on a rejected claims.

In light of the above amendments and remarks, applicants believe that all of the Examiner's rejections have been overcome. Reconsideration and allowance of claims 1-46, are respectfully solicited.

Respectfully,
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